Department of Mathematics and Statistics
Concordia University (Montreal)

MATH 204: Vectors and Matrices (Winter 2026)

Instructor	
Email address	
Lectures	
Office hours	Your professor will announce their office hours during which they will be available to give a reasonable amount of help. Note, however, that if you missed a class, it is not reasonable to expect your professor to cover the missed material for you.
IMPORTANT	Students should get the above information from their instructor and from the course Moodle site. The instructor is the person to contact should there be any questions about the course.
Prerequisite	MATH 201 or equivalent
Course website	Moodle
Reading week	Begins on Monday March 02 and ends on Sunday March 08, 2026. No classes that week.
Textbook	*Elementary Linear Algebra*, Custom Version, 12th Edition, by H. Anton, C. Rorres & A. Kaul (John Wiley & Sons). The hard-copy text can be purchased at the Concordia bookstore, https://www.bkstr.com/concordiastore/home.
Tutorials	It takes a great deal of practice to succeed in this course. To complement lectures, the Department has organized weekly tutorials, which are conducted by tutors who will help with solving problems on the topics learned in class that week, with emphasis on the material that students may have particular difficulties within this course. Students are strongly encouraged to actively participate in these problem-solving sessions which can contribute very significantly to students' success in this course.
Math Help Centre	A Math Help Centre staffed by graduate students is available. The schedule of its operation and its location will be posted in the Department and on the Department webpage https://www.concordia.ca/artsci/math-stats/services/math-help-centre.html
Grading Scheme	The final grade will be based on the higher of a) or b) below: a) 10% for the assignments, 30% for the midterm test, 60% for the final exam

	b) 10% for the assignments, 90% for the final exam **THERE IS NO "100% FINAL EXAM" OPTION IN THIS COURSE**
Assignments	Students are expected to submit assignments online using **WeBWorK**. Late assignments will not be accepted. Students are also strongly encouraged to do as many problems as their time permits from the list of recommended problems included in this outline, as well as work on the practice exercises in WeBWorK and in MyLab Math.
WeBWork	Every student will be given access to an online system called WeBWorK. The system offers many exercises and practice problems. Students must use this system to do online assignments (see Assignments below). Before each exam (midterm and final), numerous practice problems will be posted on WeBWorK to aid students in their preparation.
MyLab Math	Every student who purchases the e-text will be given access to the online system called MyLab Math. This system contains an e-version of the textbook, as well as many resources (practice exercises, typical examples on different topics, often with solutions, video materials, etc.), that help you master the course material.
Midterm test(s)	There will be one midterm test, based on the material of weeks 1-6 (as listed in the course CONTENTS below). The test will be common for all sections of this course and will be held on **Sunday, March 1, 2026, at 5:30 P.M.**, and will be 1.5 hour long. The rooms for the test will be announced at least one week before the test. There is no make-up or alternate midterm test. For students who are unable to write the midterm test (for ANY reason), the final exam weight will be elevated automatically to 90% (as per the Grading Scheme above). It is strongly recommended, however, that students prepare themselves for, and do take the midterm test because: • the midterm test may contribute up to 30% to the student's grade (see the Grading Scheme above), so it may help elevate the grade received in the course; and • the midterm test is an important opportunity to get timely feedback on the students' progress in the course. If you are taking another course with a test at the same time (NOT just the day) as this one, you may choose which of the two tests you want to write. If you are choosing to write the midterm for this course, you must then inform the instructor of the other course that you will not write their test because of the time conflict. If the test to be missed is the midterm test

	from a MATH 200 to 209 course, then the "90% final +10% assignments" scheme will be applied to calculate your grade for that other MATH course.
Final exam	The final examination will be 3 hours long and will cover all the material in the course. **Students are responsible for finding out the date, time and location of the final exams once the schedule is posted by the Examinations Office**. Conflicts or problems with the scheduling of the final exam must be reported directly to the Examinations Office, not to your instructor. **It is the University's policy that students are to be available until the end of the final exam period. Conflicts due to travel plans will not be accommodated.**

Calculators
Only calculators approved by the Department (**with a sticker attached as proof of approval**) are permitted for the midterm test and final examination. For the list of Approved calculators see https://www.concordia.ca/artsci/math-stats/services.html#calculators

Approved calculators with stickers are also available in the Concordia bookstore.

Student Services
You may wish to access the many services available to you as a Concordia student. An overview of these resources can be found here: https://www.concordia.ca/students/services.html

Access Centre for Students with Disabilities
If you need accommodations for classes, assignments, or exams, please contact the Access Center for Students with Disabilities. Website: https://www.concordia.ca/students/accessibility.html

Counseling and Psychological Services
Counselling and Psychological Services offers short-term counselling to registered Concordia students who are in Quebec. Appointments can be either virtual or in-person. Website: https://www.concordia.ca/health/mental-health/counselling.html

Academic Integrity and Academic Code of Conduct
This course is governed by Concordia University's policies on Academic Integrity and the Academic Code of Conduct as set forth in the Undergraduate Calendar and the Graduate Calendar. Students are expected to familiarize themselves with these policies and conduct themselves accordingly.

Concordia University has several resources available to students to better understand and uphold academic integrity. Concordia's website on academic integrity can be found at the following address, which also includes links to each Faculty and the School of Graduate Studies: concordia.ca/students/academic-integrity [Undergraduate Calendar, Sec 17.10.2]

Department of Mathematics and Statistics
Concordia University (Montreal)

Behaviour

All individuals participating in courses are expected to be professional and constructive throughout the course, including in their communications. Concordia students are subject to the Code of Rights and Responsibilities which applies both when students are physically and virtually engaged in any University activity, including classes, seminars, meetings, etc. Students engaged in university activities must respect this Code when engaging with any members of the Concordia community, including faculty, staff, and students, whether such interactions are verbal or in writing, face to face or online/virtual. Failing to comply with the Code may result in charges and sanctions, as outlined in the Code.

Intellectual Property

Content belonging to instructors shared in online courses, including, but not limited to, online lectures, course notes, and video recordings of classes remain the intellectual property of the faculty member. It may not be distributed, published or broadcast, in whole or in part, without the express permission of the faculty member. Students are also forbidden to use their own means of recording any elements of an online class or lecture without express permission of the instructor. Any unauthorized sharing of course content may constitute a breach of the Academic Code of Conduct and/or the Code of Rights and Responsibilities. As specified in the Policy on Intellectual Property, the University does not claim any ownership of or interest in any student IP. All university members retain copyright over their work.

Extraordinary Circumstances

In the event of extraordinary circumstances and pursuant to the Academic Regulations the University may modify the delivery, content, structure, forum, location and/or evaluation scheme. In the event of such extraordinary circumstances, students will be informed of the change.

Department of Mathematics and Statistics
Concordia University (Montreal)

Course Contents

Lectures	Sections	Topics	Recommended problems
1	1.1 1.2	Systems of Linear Equations Gaussian Elimination	1.1: 12, 15b, 20, 21 1.2: 3, 6, 8, 17, 18, 22, 23, 25, 26, 28, 33, 37
2	1.3 1.4	Matrices and Matrix Operations Inverses; Algebraic Properties of Matrices	1.3: 3f, j,6d, e,7d 1.4: 1b, 2c, 17, 22, 29
3	1.5 1.6	Elementary Matrices; Method to find A-1 Linear Systems and Invertible Matrices	1.5: 4c, d, 15, 17 1.6: 5, 12, 16, 19 Chapter 1 Supplementary Exercises: 9, 10, 11, 13 a, b, c
4	2.1 2.2	Determinants by Cofactor Expansion Evaluating Determinants by Row Reduction	2.1: 3c, 25 2.2: 11
5	2.3 3.1	Properties of Determinants, Cramer's Rule Vectors in 2-space, 3-space	2.3: 22, 27, 34, 35 Chapter 2 Supplementary Exercises: 15, 31, 32 3.1: 10d, 20, 21, 27
6	3.2 3.3	Norm, Dot Product, Distance in R2, R3 Orthogonality	3.2: 9, 11a 3.3: 4, 8, 13, 21, 25, 27
7	3.4	Geometry of Linear Systems Midterm Review class (if time permits!)	3.4: 4, 10, 13, 16
8	3.5 4.1	Cross Product Real Vector Spaces	3.5: 7, 16, 18 Chapter 3 Supplementary Exercises: 1a, b, c, d, e, f, 4, 6, 7, 12, 13, 14, 16, 23 4.1: 17b, 18
9	4.2 4.3 4.4	Subspaces Spanning Sets, Linear independence	4.2: 1, 6, 8a, 11 4.3: 2, 3, 6, 8 a, b, c, d 4.4: 1, 2, 7
10	4.5 4. 6 1.8	Coordinates and Basis Dimension Linear Transformations	4.5: 3, 7, 13 4.6: 1, 5, 8, 18 1.8: 13a, b, c, 27, 29, 32, 36, 37, 46
11	5.1 5.2	Eigenvalues and Eigenvectors Diagonalization	5.1: 5ab, 7, 8,14, 19, 20, 21, 22, 24, 25a, b, 32, 33 5.2: 6, 7, 8, 19, 20c
12		REVIEW	